STEVEN L. BESHEAR
GOVERNOR

LEONARD K. PETERS
SECRETARY

ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
DIVISION OF WATER
200 FAIR OAKS LANE, 4TH FLOOR
FRANKFORT, KENTUCKY 40601
www.kentucky.gov

September 14, 2012

City of Campbellsville
Attn: Tony W. Young, Mayor
110 S. Columbia Ave., Ste. B
Campbellsville, KY 42718

RE: City of Campbellsville
AI # 3999
Downtown Water Line Replacement Project
GPR Business Case

Dear Mayor Young:

Thank you for submitting a Green Project Reserve (GPR) business case for your proposed project, funded through the Drinking Water State Revolving Fund (DWSRF). A provision of the 2012, DWSRF funding cycle requires that to the extent there are eligible project applications; states shall use 20% of its Drinking Water State Revolving Fund capitalization grant for green infrastructure projects. These projects are intended to address water and energy efficiency improvements or other environmentally innovative activities. The Kentucky Division of Water (KY DOW) has reviewed the GPR business case for The City of Campbellsville Downtown Water Line Replacement Project and has found the justification to be acceptable with provided construction cost of $1,875,000. If the scope of the project is altered in any way to exclude the GPR eligible components, The City of Campbellsville shall submit the changes in writing to the KY DOW and receive prior approval in writing before proceeding with construction.

We look forward to working with you in finalizing your drinking water infrastructure project. If you have any questions regarding this correspondence, please contact me at (502) 564-3410, ext 4832.

Sincerely,

Greg Goode

Greg Goode, P.E.
Engineering Section
Water Infrastructure Branch
Division of Water

c: DWSRF File

Monarch Engineering, Inc.

August 16, 2012

Mrs. Amanda Yeary
Kentucky Division of Water
200 Fair Oaks
Frankfort, Kentucky 40601

Re: City of Campbellsville
Downtown Water Line Replacement Project
KIA DWSRF Loan DWL12048
Business Case

Dear Mrs. Yeary:

Please find enclosed a business case for the above-referenced project. Should you have any questions or need additional information, please advise.

Sincerely,

Deron S. Byrne, P.E.
Project Engineer

/dsb

Enclosures

556 Carlton Dr. • Lawrenceburg, Ky. 40342 • 502-839-1310 • Fax 502-839-1373

PIPE REPLACEMENT

Summary

- Replacement of approximately 24,050 feet of 2-inch, 3-inch, and 4-inch cast iron (CI), galvanized, and asbestos cement (AC) distribution pipe in the downtown area with new 6-inch distribution pipe to eliminate the loss of 6.8 million gallons of water per year (MGY), equal to 0.75% of total production and 4.8% of total system water loss.
- Loan amount = $1,875,00.00
- Water saving (green) portion of loan = 100%
- Annual water savings = 6.8 million gallons (MG) or $20,060 per year.

Background

- The water system includes approximately 302 miles of CI, PVC, AC and DI distribution pipe ranging from 2 to 18 inches in diameter. Approximately 155 miles of the water systems water lines lie within the City limits (downtown) and portions were installed as early as the 1930s and 1940's. The treatment plant processes an average of 2.5 million gallons per day (MGD) or 913 million gallons per year (MGY). The existing water system mains in the area are generally undersized and are composed of aging and inferior materials including asbestos cement. Frequent leaks, low system pressure, and poor water quality are all problems that affect the area. The high consumer density within the area greatly amplifies these system shortcomings.
- As part of the City's water loss prevention and water system improvements, trends in the distribution pipeline repairs from 2008 to the present were evaluated to identify potential pipeline replacement projects. It was determined that the areas determined to be installed in the 1930s and 1940s distribution pipe incurred the most repairs.
- The 1930s and 1940s pipe accounts for 1.5% (4.6 miles) of the 302 miles of distribution pipe and 3.0% of the 155 miles of distribution pipe in the City limits. This project will replace 24,050 feet of 2-inch, 3-inch, and 4-inch pipe with 6-inch pipe.

Results and Benefits

- Repairs were made from 2009 to the present; the highest frequency of repairs was in the 1930s and 1940s pipes and equally distributed among all sizes.
- The City has concluded there is minimal water loss in pipes installed after the 1930s and 1940s, and estimates that 6.8 MGY of water loss through the distribution pipe is primarily from 1930s to the 1940s pipe.
- Replacing old and undersized water lines will increase water efficiency by decreasing the amount of water loss and by decreasing the amount of operation and maintenance expenditures on repairing leaks.

Calculated Water Loss

- The water produced by the City in 2011 was 913,000,000 gallons. The amount of water sold was 769,836,400 gallons. Total water sold to wholesale buyers was 149,066,200 gallons. Total water sold to residential and commercial buyers was 620,770,200.
- To calculate overall water loss, subtract the water billed/consumed from water produced: 913 MGY – 770 MGY = 143 MGY of water pumped is lost (16%).
- The estimated 6.8 MGY of water loss from the 1930s and 1940s pipe is 4.8% of the overall water loss of the downtown system: 6.8/143 = 4.8%

Conclusion

- By replacing the 24,050 feet of pipe the system anticipates conserving 6.8 MGY (4.8% of overall water loss). The cost to pump/treat water is $2.95 per 1,000 gallons. Cost savings from reduced leaks for the year are estimated at $20,060 (6,800 gallons * $2.95).
- Additional benefits include reductions in unnecessary pumping and operation and maintenance expenditures, and eliminating potential health hazards associated with waterborne pathogens entering the water distribution system.

Annual Water Loss Report

Water Utility: City of Campbellsville

Year: 2011

LINE #	ITEM	GALLONS	%
1	**WATER PRODUCED or PURCHASED**		
2	Water Produced	913,000,000	100%
3			
4	**TOTAL PRODUCED AND PURCHASED**	913,000,000	
	WATER SOLD		
5	Residential	620,770,200	81%
6	Commercial		0%
7	Industrial		0%
8	Bulk Loading Stations		0%
9	Wholesale	149,066,200	19%
10	Other Sales (explain) _____		0%
11	**TOTAL WATER SOLD**	769,836,400	84%
12	**TOTAL WATER NOT SOLD**	143,163,600	16%
	BREAKDOWN OF UNSOLD WATER USED		
13	Utility and/or Water Treatment Plant	13,163,700	1%
14	Wastewater Plant		0%
15	System Flushing	10,000,000	1%
16	Fire Department		0%
17	Other (explain) _____		0%
17A	**TOTAL UNSOLD WATER USED**	23,163,700	3%
	BREAKDOWN OF WATER LOST		
18	Tank Overflows	20,000,000	2%
19	Line Breaks	60,000,000	7%
20	Other Loss	40,000,000	4%
20A	**TOTAL UNSOLD WATER LOST**	120,000,000	13%

TOTAL WATER LOSS = (Line 17A+Line 20A)/Line 4 **16%**